

APPENDIX A

CLAIMS ON APPEAL

11. A semiconductor device including both a large-diameter contact hole and a small-diameter contact hole formed to penetrate through an insulator film formed on a conductive portion to reach said conductive portion, each of said large-diameter contact hole and said small-diameter contact hole having a constant-diameter portion formed on a lower portion thereof, and a funnel-shaped portion formed on an upper portion thereof to open or spread upward, said small-diameter contact hole being completely filled with a plug of a refractory conductive material, and said large-diameter contact hole being partly filled by said refractory conductive material which covers a sidewall surface of said large-diameter contact hole excluding said funnel-shaped portion, to a position which is lower than a lower end of said funnel-shaped portion by a predetermined distance, a wiring conductor layer being deposited on said insulator film to cover a top surface of said plug of said refractory conductive material and to fill at least in part space remaining in said large-diameter contact hole thereby to cover a bottom of said large-diameter contact hole and a surface of said sidewall of said refractory conductive material within said large-diameter contact hole, and to cover a surface of said funnel-shaped portion of said large-diameter contact hole.

12. A semiconductor device claimed in Claim 11, wherein said refractory conductive material is a material selected from the group consisting of a refractory metal and a silicide of a refractory metal.

13. A semiconductor device claimed in Claim 11, wherein said large-diameter contact hole has an aspect ratio of not greater than 2, and said small-diameter contact hole has an aspect ratio of greater than 2.

14. A semiconductor device claimed in Claim 13, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

15. A semiconductor device claimed in Claim 11, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

16. A semiconductor device claimed in Claim 11, wherein said refractory conductive material is a material selected from the group consisting of a refractory metal and a silicide of a refractory metal.

17. A semiconductor device claimed in Claim 16, wherein said large-diameter contact hole has an aspect ratio of not greater than 2, and said small-diameter contact hole has an aspect ratio of greater than 2.

18. A semiconductor device claimed in Claim 17, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

19. A semiconductor device claimed in Claim 16, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

20. A semiconductor device including both a large-diameter contact hole and a small-diameter contact hole formed to penetrate through an insulator film formed on a

conductive portion to reach said conductive portion, each of said large-diameter contact hole and said small-diameter contact hole having a funnel-shaped portion formed on an upper portion thereof to open or spread upward, said small-diameter contact hole being completely filled with a plug of a refractory conductive material, and said large-diameter contact hole being partly filled by said refractory conductive material which covers a sidewall surface of said large-diameter contact hole excluding said funnel-shaped portion, to a position which is lower than a lower end of said funnel-shaped portion by a predetermined distance, said refractory conductive material covering said sidewall surface of said large-diameter contact hole having a thickness on a lower portion of said hole, equal to about half the diameter of the small-diameter contact hole, a wiring conductor layer being deposited on said insulator film to cover a top surface of said plug of said refractory conductive material and to fill at least in part space remaining in said large-diameter contact hole thereby to cover a bottom of said large-diameter contact hole and a surface of said sidewall of said refractory conductive material within said large-diameter contact hole, and to cover a surface of said funnel-shaped portion of said large-diameter contact hole.

21. A semiconductor device claimed in Claim 20, wherein said refractory conductive material is a material selected from the group consisting of a refractory metal and a silicide of a refractory metal.

22. A semiconductor device claimed in Claim 20, wherein said large-diameter contact hole has an aspect ratio of not greater than 2, and said small-diameter contact hole has an aspect ratio of greater than 2.

23. A semiconductor device claimed in Claim 22, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

24. A semiconductor device claimed in Claim 20, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

25. A semiconductor device claimed in Claim 20, wherein said refractory conductive material is a material selected from the group consisting of a refractory metal and a silicide of a refractory metal.

26. A semiconductor device claimed in Claim 25, wherein said large-diameter contact hole has an aspect ratio of not greater than 2, and said small-diameter contact hole has an aspect ratio of greater than 2.

27. A semiconductor device claimed in Claim 26, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

28. A semiconductor device claimed in Claim 25, wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.